The tester works with software that enables control pulses for radio-controlled servos and model railway controllers to be output via the Centronics port.

Design by Joachim Schröder

minimal servo tester

via the Centronics port

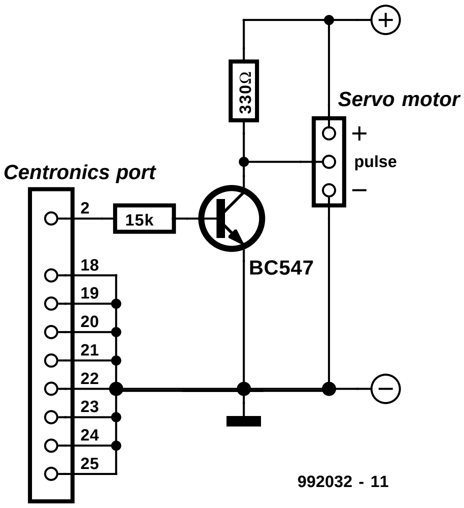

Figure 1. Circuit diagram of the minimal servo tester.

Detailed knowledge of the parameters and properties of servo systems is an essential asset for successful model construction. As a reminder: a servomotor is operated by pulse-width modulated signals with a fixed period of 20 ms supplied by an appropriate receiver or servo amplifier. The pulse duration that determines the angular travel of the servomotor varies between 1–2 ms. A pulse duration of 1.5 ms sets the motor to its centre position.

The April 1999 issue of this magazine contains a battery-operated, intelligent, microcontroller-based servo tester ('Servo tester with built-in pulse generator'). If the portability and mobility of that servo tester are ignored, a much simpler unit evolves as described here. In this, the microcontroller is replaced by a personal computer (PC), so that the remaining hardware consists merely of a connecting cable to the printer interface, two resistors, and a small-signal transistor—see **Figure 1**.

The pulse-duration modulated signal is generated by the computer and is available at pin 2 of the Centronics interface. Its period is 50 ms, which deviates from the standard 20 ms width, but for test purposes this is not of any consequence. The signal is buffered and inverted by the transistor and then applied to the servomotor.

The servomotor and transistor share the same power supply of 4.8–6 V.

Pins 18–24 of the Centronics interface connector are strapped to earth.

After the software has been installed, the onset of the program is indicated in a small window on the monitor—see Figure 2. The 'position' slider bar (scroll box) sets the pulse duration between 0.6 ms (left) and 1.95 ms (right) and so fixes the position of the servomotor. The centre position of the motor corresponds to a pulse duration of 1.27 ms. However, this is so only when the 'trim' slider bar is also at the centre of its travel. When the trim slider bar is shifted to the left, the pulse duration diminishes (over the range 450 µs to 1.78 ms), and when the bar is moved to the right, the pulse width is lengthened (over a range of 770 µs to 2.12 ms).

Pulse at the lower end of the window enables positive pulses (standard) or negative ones to be obtained. The auto return checkbox switches the automatic return on and off.

The software is made in Delphi for Windows 95/98. It consists of two units: one for Port in/Port out programming and the other to establish delays in the microsecond range (Delay µs/µs).

The address of the Centronics port may be input in decimal or hexadecimal with parameter ADR= in the file .\srvts.ini. The default setting is 0278h as shown at the top of **Figure 2**.

Diskette 996017-1 (see Readers Services towards the end of this issue) contains the requisite software as well as the source code. This enables users to add their own extensions, such as the exact length of the pulse duration.

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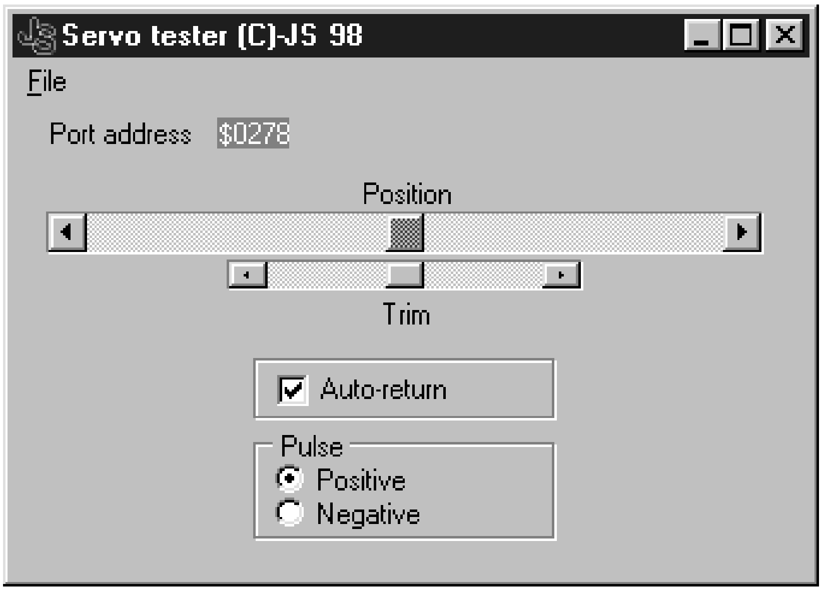
Figure 2. Screendump of the start window.



Port address $0278

☑ Auto-return

Pulse
● Positive
○ Negative